

WHAT IS CLAIMED IS:

1 1. A pulse oximeter apparatus comprising:
2 a pulse oximeter sensor having an output for providing a signal
3 corresponding to a measured physiological characteristic;
4 a memory associated with the sensor and located external to a monitor
5 which receives the sensor signal, said memory containing data relating to said sensor and
6 containing a digital signature.

1 2. The apparatus of claim 1 wherein said signature is signed using a
2 private key, said signature being verifiable with a public key in the monitor.

1 3. The apparatus of claim 1 wherein said signature is a Rabin-
2 Williams signature, an RSA signature, a Diffie-Hellman signature, an El Gamal signature,
3 or an elliptic curve signature.

1 4. The apparatus of claim 1 wherein at least a first portion of said data
2 is contained within said digital signature.

1 5. A method for creating a digital signature in a pulse oximeter
2 apparatus including a memory associated with a pulse oximeter sensor having an output
3 for providing a signal corresponding to a measured physiological characteristic, said
4 method comprising:
5 signing at least a portion of said data relating to said sensor to create a
6 digital signature;
7 storing said digital signature in said memory; and
8 storing data relating to said sensor in said memory.

1 6. The method of claim 5 further comprising:
2 creating a public key and private key pair;
3 imbedding said public key in a memory in a sensor reader; and
4 using said private key to sign said data and create said digital signature.

1 7. The method of claim 5 wherein said digital signature is a Rabin-
2 Williams signature, an RSA signature, a Diffie-Hellman signature, an El Gamal signature,
3 or an elliptic curve signature.

1 8. The method of claim 5 further comprising imbedding at least a
2 portion of said data in said digital signature.

1 9. A pulse oximeter sensor reader comprising:
2 a housing;
3 a sensor input for receiving a signal from a pulse oximeter sensor
4 corresponding to a measured physiological characteristic;
5 a sensor processing circuit coupled to said sensor input;
6 a memory input for receiving digital data stored in a memory associated
7 with said sensor, said digital data including a digital signature;
8 a first sensor reader memory coupled to said memory input for storing said
9 digital data;
10 a second sensor reader memory storing a signature verification key;
11 a third sensor reader memory storing a program for verifying the digital
12 signature of said digital data using said signature verification key; and
13 a transfer circuit for providing at least a portion of said digital data to said
14 sensor processing circuit.

1 10. The sensor reader of claim 9 wherein said first and second sensor
2 reader memories are different portions of the same physical memory.

1 11. The sensor reader of claim 9 wherein said sensor processing circuit
2 comprises a microprocessor.

1 12. The sensor reader of claim 9 wherein said signature verification
2 key is a public key of a private key and public key pair.

1 13. The sensor reader of claim 9 wherein said signature is a Rabin-
2 Williams signature.

1 14. The sensor reader of claim 9 wherein at least a portion of said
2 digital data is imbedded in said digital signature.

1 15. A pulse oximeter system comprising:
2 (a) a pulse oximeter sensor apparatus including
3 a sensor, said sensor having an output for providing a signal
4 corresponding to a measured physiological characteristic, and
5 a sensor memory associated with said sensor, said sensor memory
6 having digital data relating to said sensor and having a digital signature, said digital
7 signature being a signature of at least a portion of said data; and
8 (b) a pulse oximeter sensor reader including
9 a sensor reader housing;
10 a sensor input for receiving said signal from said sensor
11 corresponding to a measured physiological characteristic;
12 a sensor processing circuit coupled to said sensor input;
13 a memory input for receiving said digital data from said sensor
14 memory;
15 a first sensor reader memory coupled to said memory input for
16 storing said digital data;
17 a second sensor reader memory storing a signature verification key;
18 and
19 a third sensor reader memory storing a program for verifying said
20 digital signature using said signature verification key.

1 16. The apparatus of claim 1 wherein said memory associated with said
2 sensor is mounted in an adapter coupled between said sensor and said monitor.

1 17. The method of claim 5 wherein said memory associated with said
2 sensor is mounted in an adapter coupled between said sensor and a monitor.

1 18. The system of claim 15 wherein said memory associated with said
2 sensor is mounted in an adapter coupled between said sensor and said sensor reader.

1 19. A pulse oximeter apparatus comprising:
2 a sensor having an output for providing a sensor signal corresponding to a
3 measured physiological characteristic; and
4 an adapter coupled to said sensor, said adapter including a memory, said
5 memory containing sensor data and containing a digital signature.

1 20. The apparatus of claim 19 further comprising:
2 an internal monitor in said adapter for providing an output signal
3 corresponding to said physiological characteristic; and
4 a conditioning circuit for modifying said sensor signal to produce a
5 synthetic sensor signal, such that a second, external monitor using said synthetic sensor
6 signal will produce an output corresponding to said output signal of said internal monitor.